

IN THE CLAIMS:

1. A method for building a time-sliced architecture in a spread spectrum system, comprising the steps of:
  - 5 (a) analyzing a set of applications, said analyzing including the steps of:
    - (i) extracting real time aspects from each application in said set of applications;
    - (ii) determining an optimal granularity based on said real time aspects; and
    - 10 (iii) adjusting said optimal granularity based on a context switching overhead; and
  - (b) building a specific time-sliced architecture to accommodate said range of applications based on said analyzing.
- 15 2. The method of claim 1, wherein said extracting includes the step of: profiling fundamental processing elements in each application in said set of applications.
3. The method of claim 1, wherein said determining includes the step of:
  - 20 determining a lowest level of granularity needed for each application in said set of applications.
4. The method of claim 1, wherein said adjusting includes the step of: performing a sensitivity analysis.
- 25 5. The method of claim 4, wherein said performing includes the step of: determining an optimal trade-off between said context switching overhead and said optimal granularity.
- 30 6. The method of claim 1, wherein said building includes the steps of: determining a size for a data cache based on said extracting;

implementing a hierarchical caching structure in said data cache; and  
applying said data cache in said specific time-sliced architecture.

7. A computer program product for building a time-sliced architecture in a spread  
5 spectrum system, comprising:

(a) logic code for analyzing a set of applications, said logic code for  
analyzing including:

- (i) logic code for extracting real time aspects from each application  
in said set of applications;
- 10 (ii) logic code for determining an optimal granularity based on said  
real time aspects; and
- (iii) logic code for adjusting said optimal granularity based on a  
context switching overhead; and

(b) logic code for building a specific time-sliced architecture to  
15 accommodate said range of applications based on said analyzing.

8. The computer program product of claim 7, wherein said logic code for  
extracting includes:

logic code for profiling fundamental processing elements in each application in  
20 said set of applications.

9. The computer program product of claim 7, wherein said logic code for  
determining includes:

logic code for determining a lowest level of granularity needed for each  
25 application in said set of applications.

10. The computer program product of claim 7, wherein said logic code for  
adjusting includes:

logic code for performing a sensitivity analysis.  
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11. The computer program product of claim 10, wherein said logic code for performing includes:

logic code for determining an optimal trade-off between said context switching overhead and said optimal granularity.

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12. The computer program product of claim 7, wherein said logic code for building includes:

logic code for determining a size for a data cache based on said extracting;

logic code for implementing a hierarchical caching structure in said data cache;

10 and

logic code for applying said data cache in said specific time-sliced architecture.

13. A time-sliced processor for use in a spread spectrum system comprising:

a master control unit including a time slot table and a partial sums search table;

15 a data cache for receiving input data; and

a plurality of finger processing elements, each element comprising:

a cache for receiving data from the data cache,

a data selector connected to an output of the cache,

a despreader connected to an output of the data selector, and

20 a symbol integrator connected to an output of the despreader.